Enova DGX Digital Media Switchers

Analog, Digital, IP and Audio & Video Switching, Scaling, Distribution & Control Solution

Today's IT departments struggle to incorporate AV into an IT world using standards-based architectures to deliver consistently reliable performance. But technology challenges such as High-bandwidth Digital Content Protection (HDCP) authentication have frustrated the marketplace. The Enova DGX Digital Media Switcher was developed specifically to resolve AV issues for digital video distribution while enabling connected devices to be centrally monitored, managed and controlled over an IT infrastructure.

INTRODUCTION

As video is used more frequently in businesses, schools and government, integrators require solutions that can distribute multiple sources of analog and digital audio and video, locally over long distances. Traditionally, a digital media switcher is used to send content from numerous sources to displays and projectors throughout a building. But many digital media switchers have significant shortcomings in the management of multiple video output resolutions, content copyright protection and maintaining support for legacy, analog-only devices.

Many matrix switchers handle HDCP-compliant sources poorly, requiring integrators to use cumbersome, time-consuming workarounds. For example, in a sports bar, when an additional display is selected to show the same game already playing in other areas, all of the displays in the bar blank for several seconds until HDCP authentications are completed. Additionally, in a typical multi-screen, multi-resolution installation, video content has to be forced down to a common resolution among all output devices. This results in inferior video quality on expensive, high definition displays.

AMX has invested significantly in research and development to create AV solutions for an IT world. The result is a new line of digital media switchers that provide the most reliable, end-to-end analog plus digital audio and video distribution solution. The Enova DGX 16 and 32 Digital Media Switchers resolve copy protection issues, centrally manage connected devices and overcome the challenges facing integrators.

OVERVIEW

The award-winning Enova DGX 16 and 32 are the industry's first modular digital media switchers with a built-in central controller. They manage and distribute analog plus digital audio and video including HDMI with HDCP (HDMI/HDCP), control and Ethernet without any of the typical problems associated with HDCP authenticated content distribution and switching.

Both models include AMX exclusive features, such as InstaGate Pro™ Technology designed to resolve HDCP limitations and SmartScale™ Technology that perfectly scales video for each connected display. The Enova DGX series uses field-swappable input and output boards available in a variety of formats including HDMI, DVI and DXLink (twisted pair cable). The embedded AMX NetLinx Central Controller and Ethernet switch enable centralized monitoring, management and control of every connected device – simplifying support for AV and IT departments alike.

When used with AMX DXLink Transmitters and Receivers, audio, video, bi-directional control, Ethernet and power can be distributed over a single, standard good quality (250 Mhz or better rating) twisted pair cable up to 200m (100m to the matrix switcher and 100m after the matrix switcher). Multi-format DXLink Transmitters provide automatic analog to digital signal conversion, providing support for legacy analog devices (RGBHV, Component, S-Video, and Composite) as well as for digital signals (HDMI/HDCP, DisplayPort and DVI).

KEY FEATURES

- **InstaGate Pro Technology** – Eliminates HDCP key constraints and HDCP delays
- **SmartScale Technology** – Ensures best resolution on every display in mixed resolution applications
- **Multi-Format Inputs** – Supports analog and digital signals
- **Twisted Pair Distribution** – Send audio, video, bi-directional control and Ethernet up to 100m
- **Audio Breakaway and Embedding** – Allows audio and video signals from one source to be switched to different destinations
- **Integrated NetLinx Central Controller** – Allows any connected device to be managed, monitored or controlled
- **Integrated Ethernet Switch** – Pass Ethernet or stream IP video through the attached DXLink Transmitter or Receiver
- **Compact, Efficient Design** – Simplifies installation and maintenance
- **Design for Reliability** – Ensures maximum reliability for applications requiring 24/7 uptime

Enova DGX 16   Enova DGX 32

FLEXIBLE CONFIGURATION

The Enova DGX Enclosure includes an integrated NetLinx Controller, redundant power supplies and can be populated with Enova DGX video input and output boards in addition to optional audio insert/extract boards. There are four connections per video board. The Enova DGX 16 enclosure holds four video input boards and four video output boards for a maximum matrix of 16x16. The Enova DGX 32 enclosure holds eight video input boards and eight video output boards for a maximum matrix of 32x32.

Enova DGX 16 - Front

Enova DGX 16 - Rear

Enova DGX 32 - Front

Enova DGX 32 - Rear

INPUT/OUTPUT BOARDS

| Connection Type	Video Supported	Number of Connections per Board	Number of Chassis Slots Used	Board Image
HDMI	HDMI with HDCP DisplayPort	4	1	
DVI	DVI with HDCP	4	1	
DXLink – Twisted Pair	HDMI with HDCP Analog - RGB, Component, Composite, S-Video	4	1	
DGX Fiber	DVI Analog - RGB, Component (Non-compliant HDCP Video)	4	1	
Audio Insert/Extract	N/A	16	0	

INSTAGATE PRO[TM]

HDMI promised to simplify cabling and provide consumers with the highest quality AV experience. However, the issues caused by HDCP switching delays and key overruns have made the installation of traditional HDMI signal distribution systems challenging and often unusable.

PROBLEM – HDCP SWITCHING DELAYS

HDCP switching delays traditionally occur when a new destination is added to a source (via a new switching combination) through the matrix switcher. Because the source must ensure that all connected downstream devices are HDCP compliant, once a new destination is connected, the source must effectively "mute" the video by blanking until authentication is complete. This process can take several seconds per connected display and longer when several displays are connected.

AMX SOLUTION – INSTAGATE PRO ELIMINATES HDCP SWITCHING DELAYS

With InstaGate Pro, the Enova DGX Digital Media Switchers address HDCP authentication as soon as a source and destination are plugged in. Consequently, there is zero HDCP delay or blanking during the switching process.
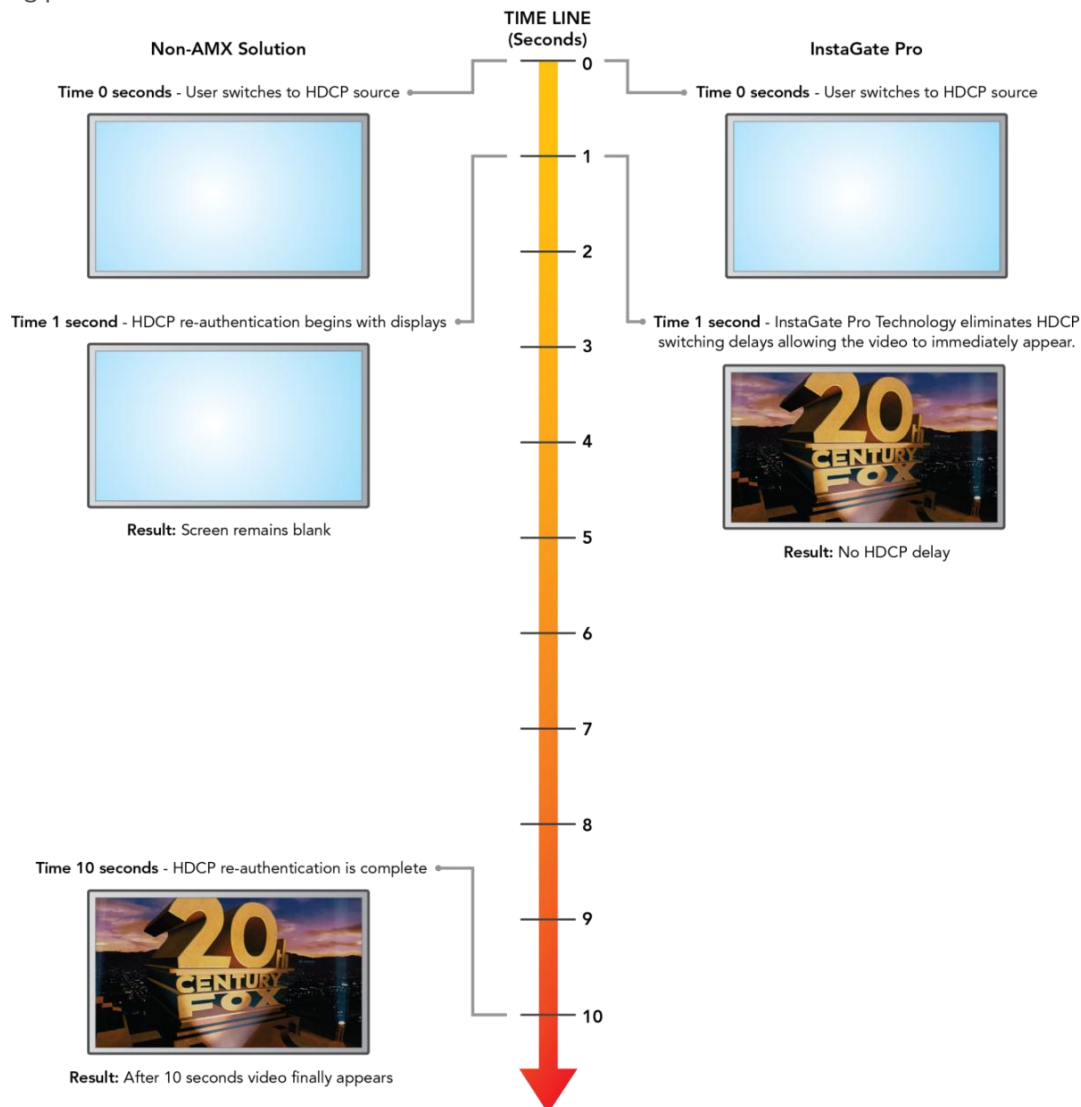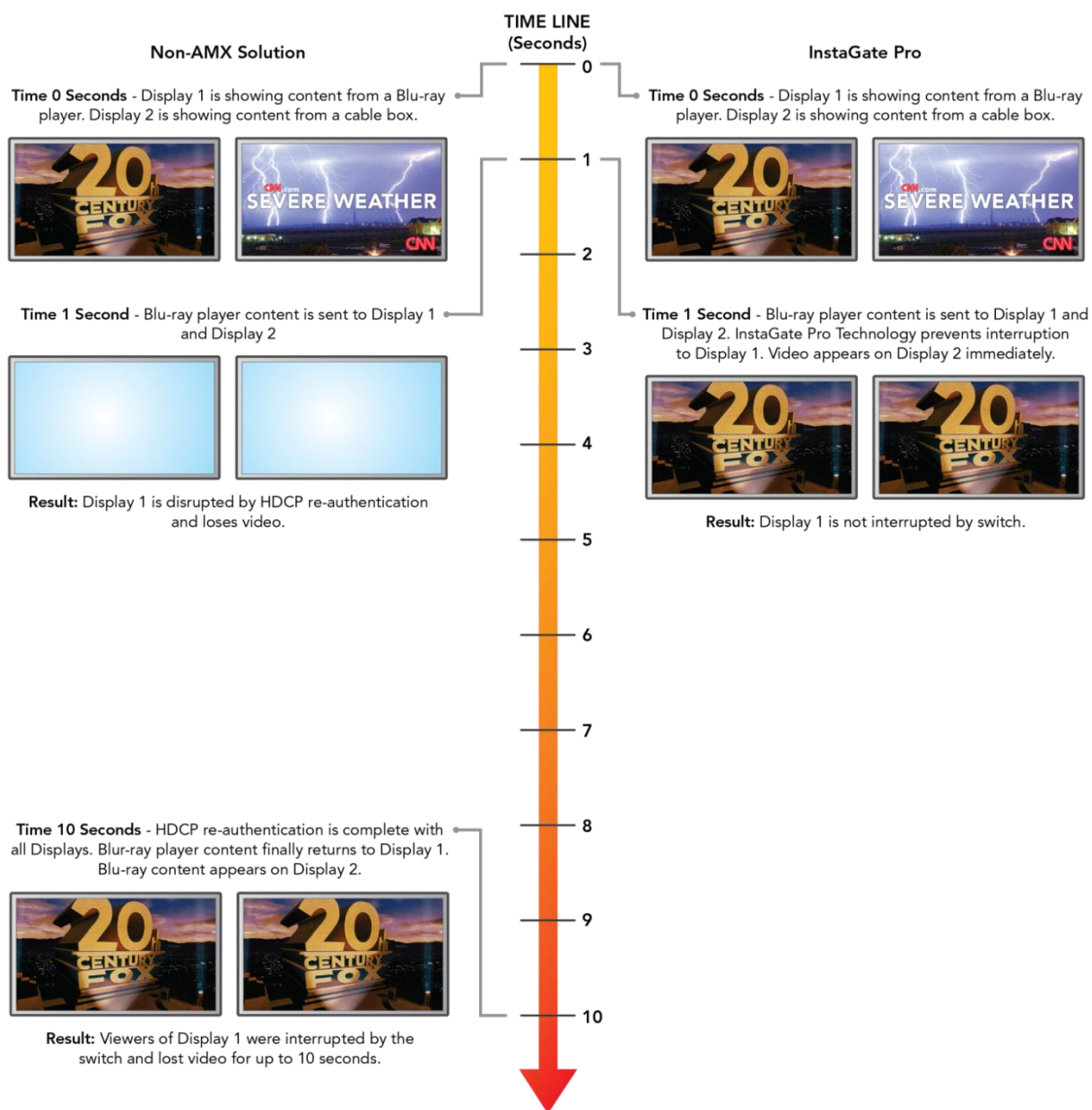
PROBLEM - HDCP VIEWING DISTRUPTIONS

Video blanking can really become an issue when a source is already present on one display and then switched to an additional display. When the new display is added, the original output (which was showing video previously) appears to shut off as the source initiates its authentication process for the combination of the two displays.

AMX SOLUTION – INSTAGATE PRO ELIMINATES HDCP VIEWING DISRUPTIONS

With AMX's InstaGate Pro, switches are executed effectively while retaining video from the source even when adding a new output to that same source. This results in users getting video from the source they want, without delays and interruptions to other displays already showing video from the same source.

Non-AMX Solution

TIME LINE (Seconds)

InstaGate Pro

Time 0 Seconds - Display 1 is showing content from a Blu-ray player. Display 2 is showing content from a cable box.

Time 1 Second - Blu-ray player content is sent to Display 1 and Display 2

Result: Display 1 is disrupted by HDCP re-authentication and loses video.

Time 10 Seconds - HDCP re-authentication is complete with all Displays. Blur-ray player content finally returns to Display 1. Blu-ray content appears on Display 2.

Result: Viewers of Display 1 were interrupted by the switch and lost video for up to 10 seconds.

Time 0 Seconds - Display 1 is showing content from a Blu-ray player. Display 2 is showing content from a cable box.

Time 1 Second - Blu-ray player content is sent to Display 1 and Display 2. InstaGate Pro Technology prevents interruption to Display 1. Video appears on Display 2 immediately.

Result: Display 1 is not interrupted by switch.

PROBLEM – HDCP KEY OVERRUNS AUTOMATICALLY SHUTDOWN SOURCE DEVICE

HDMI/HDCP authentication requires sources to validate downstream display keys to ensure that all destinations are HDCP compliant. However, there is no requirement specifying how many of those device keys a source manufacturer must support. As a result, varying HDMI/HDCP sources support a range of downstream keys. Even within a single manufacturer's product line, key support numbers vary and are rarely provided in product documentation. This unknown key support limit is generally only discovered once it is exceeded and the source device simply shuts itself off.

NON-AMX SOLUTIONS - PREVENT USERS FROM WATCHING VIDEO EVERYWHERE THEY WANT
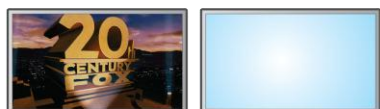
Overcoming key overruns has traditionally been dealt with via a set of tools or design considerations, which limit the number of outputs a source can be switched to. Some sources support a single key, which limits a matrix switcher to switch to only a single output at a time. When a user wants to switch to more than one output or all outputs, this becomes an issue.

AMX SOLUTION – INSTAGATE PRO ELIMINATES HDCP KEY OVERRUNS

With InstaGate Pro, the entire HDCP negotiation process is handled within the matrix switching system. Validation of each output is completed without concern for source key limitations. As long as a source can handle a single key, it can be sent to any or all outputs as long as those displays are HDCP compliant. This process is handled without additional tools or programming. Simply plug in compliant sources and destinations and begin switching. In addition, because every output is being validated for HDCP compliance individually, switching an HDCP source to a non-compliant display won't negatively affect compliant displays showing video from the same source. The non-compliant display simply receives a visual indication (solid red screen) that it is not receiving video, while all compliant displays continue to show video without issue.

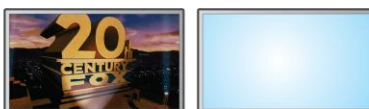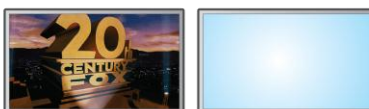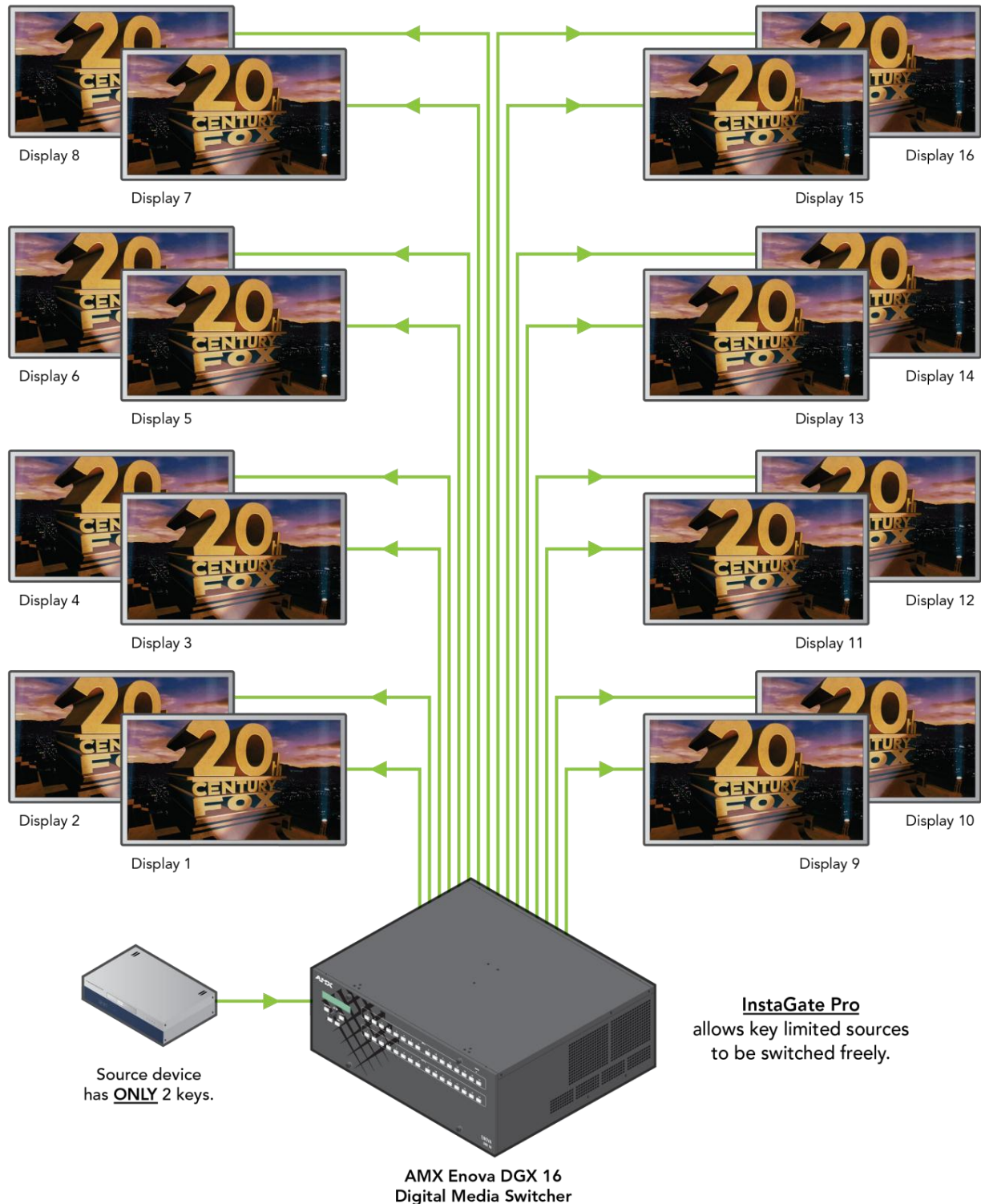| Non-AMX Solution With No Key Management System	Non-AMX Solution With Key Management System	InstaGate Pro
User switches HDCP source to a second display	User switches HDCP source to a second display	User switches HDCP source to a second display
Blu-ray player exceeds HDCP key limit (HDCP key limit of 1) causing the Blu-ray player to automatically shutdown.	Competitive Matrix Switcher software limits the number of outputs to the number of keys a source device has (HDCP key limit 1).	InstaGate Pro Technology eliminates HDCP key limitations and allows HDCP content to be freely switched to all displays.
Result: No video on both displays.	**Result:** Prevents automatic shutdown of Blu-ray player, but does not allow user to watch content where they want to watch it.	**Result:** Users can watch what they want, where they want it.

AMX SOLUTION - INSTAGATE PRO ALLOWS USERS TO WATCH VIDEO EVERYWHERE THEY WANT

While there are a wide range of switchers from the most to least expensive to the most expensive, Enova Matrix Switchers with InstaGate Pro distribute HDMI/HDCP signals easily, straightforwardly and painlessly without constraints, limits or hassles.

Display 8
Display 7
Display 16
Display 15

Display 6
Display 5
Display 14
Display 13

Display 4
Display 3
Display 12
Display 11

Display 2
Display 1
Display 10
Display 9

Source device has **ONLY** 2 keys.

InstaGate Pro
allows key limited sources
to be switched freely.

**AMX Enova DGX 16**
Digital Media Switcher

SMARTSCALE® TECHNOLOGY

PROBLEM – MIXED RESOLUTIONS CREATE INSTALLATION CHALLENGES AND POOR VIDEO QUALITY

Designing matrix switching solutions for distribution of HDMI/HDCP and other mixed analog sources can be challenging due to the large number of source and destination resolutions within the system. In a matrix switching environment, each source can only output one resolution at a time. Incompatibilities in the system can arise when the output resolution of the source is not supported by some or all displays in the system. This problem is often overlooked in the design process, forcing installers to purchase costly scalers to overcome the issue.
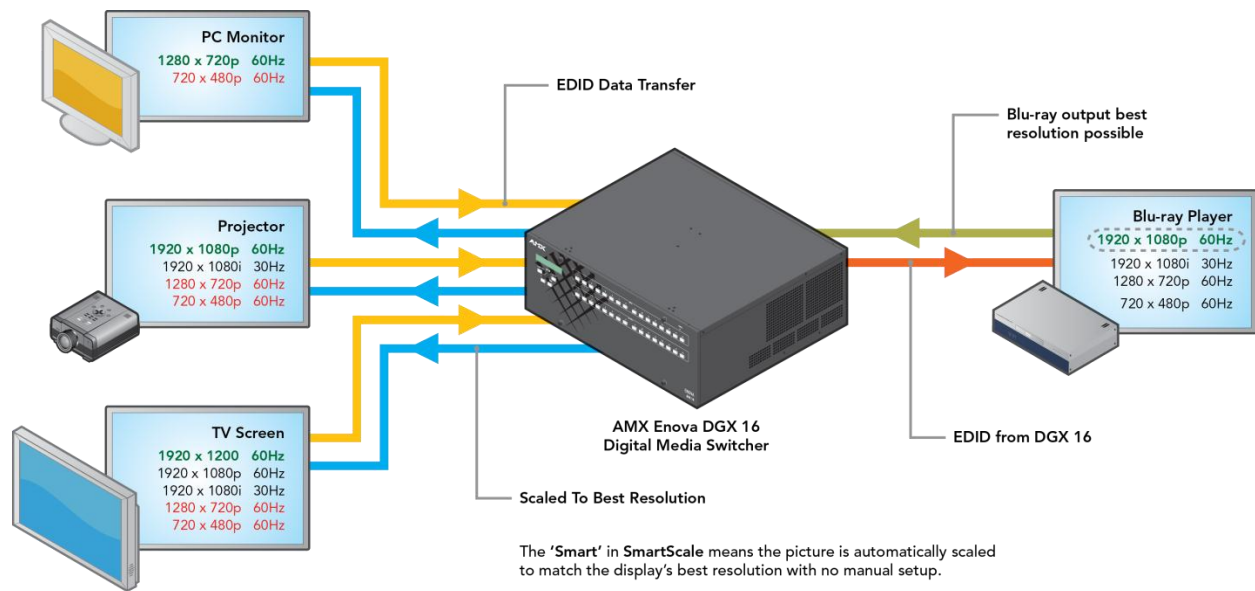
NON-AMX SOLUTION - DEFAULT TO THE WEAKEST LINK

As a solution, some matrix switchers actively evaluate the EDID files within the connected displays and present a combined EDID set. Since this process just defines a common resolution between all connected displays, the highest resolution presented to the entire system will be from the lowest resolution display. This is often referred to as best common or greatest common resolution (also known as weakest link). In most cases, it means every source is being forced down to a lower resolution, meaning poorer image quality and an overall inferior distribution system. Frequently the result is expensive 1080p displays are being degraded to standard definition resolutions.
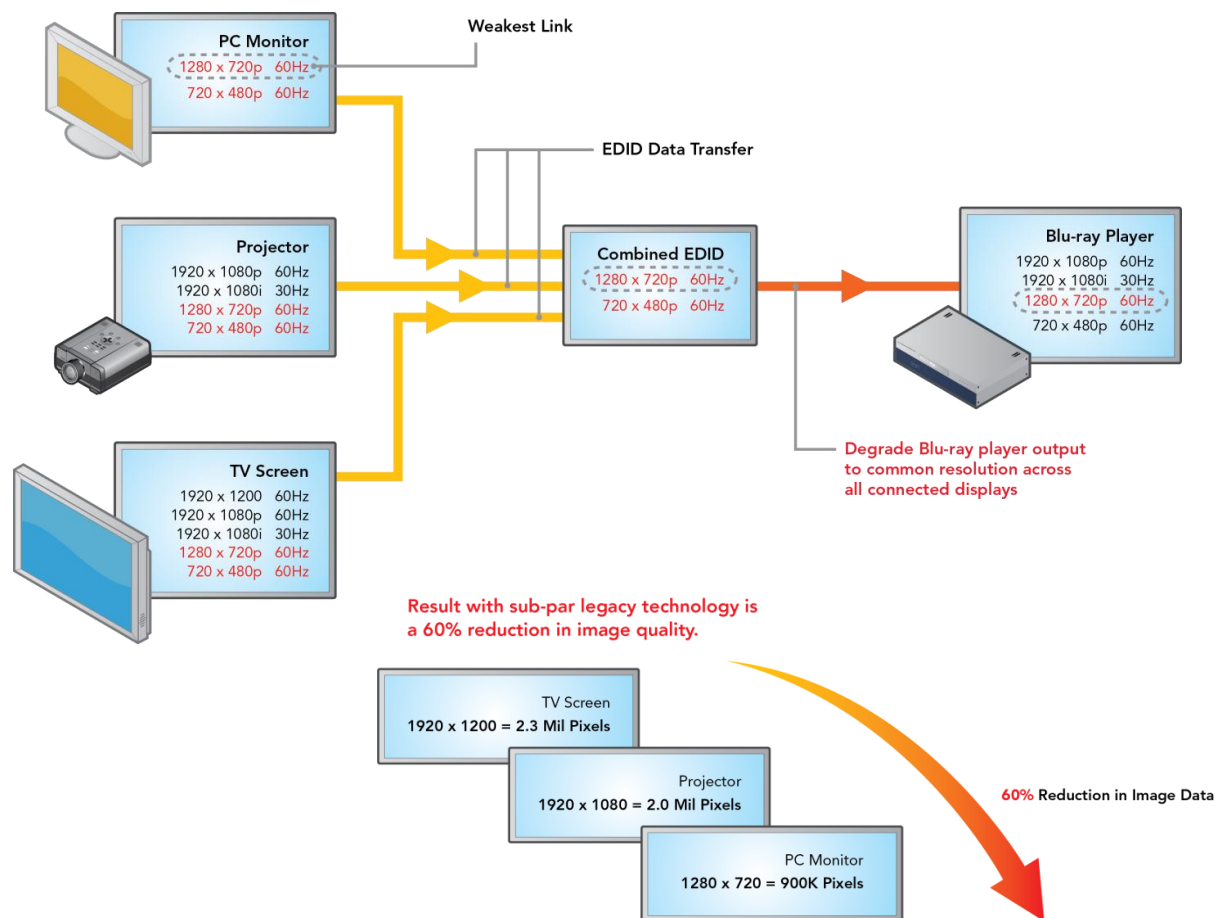
AMX SOLUTION – SMARTSCALE TECHNOLOGY GUARANTEES EVERY PICTURE LOOKS ITS BEST

AMX solves this problem using SmartScale Technology on every output. SmartScale automatically responds to the display's declared EDID information and delivers a custom-scaled image, based not only on the preferred resolution but also additional information such as horizontal and vertical pixel count, detailed timing, color space chromaticity and more. No other manufacturer provides automatic video resolution support at this detailed level. SmartScale eliminates the incompatibilities between sources and displays operating at different resolutions by accepting the highest resolution of every source device, ensuring every display operates at its preferred resolution. SmartScale guarantees every picture looks its best with no manual adjustments.


The 'Smart' in SmartScale means the picture is automatically scaled to match the display's best resolution with no manual setup.

RESULT: Each display shows content at its optimal resolution.

MULTI-FORMAT INPUTS

**PROBLEM – MANAGING DISTRIBUTION OF ANALOG AND DIGITAL VIDEO SIGNALS**

Most new AV integrations include a mix of digital sources, including HDMI/HDCP and legacy analog sources that output Composite, Component or RGBHV. Users typically upgrade these legacy sources later as upgrading all analog sources at once can be expensive and impractical. Until now, consultants and end-users were forced to manage analog and digital video signals separately with independent distribution systems. Alternatively, scalers could be purchased for each input device prior to entering the distribution platform. Both methods ultimately result in a more costly, less scalable solution as source devices change over time.

NON-AMX SOLUTION - MUST USE SEPARATE EQUIPMENT TO CONVERT ANALOG TO DIGITAL
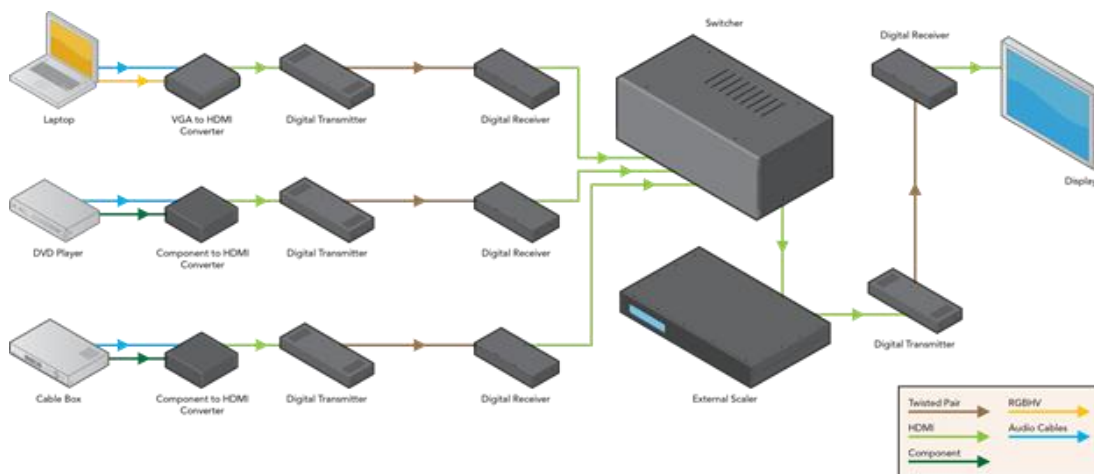
AMX SOLUTION - PROVIDES AUTOMATIC ANALOG TO DIGITAL CONVERSION

AMX solves this problem by providing a solution that automatically accepts analog or digital signals into a common switching platform. When coupled with AMX's multi-format DXLink Transmitters, the Enova DGX platform offers a solution that provides support for analog sources today and a ready-to-go upgrade solution when those analog sources are replaced with digital sources in the future.
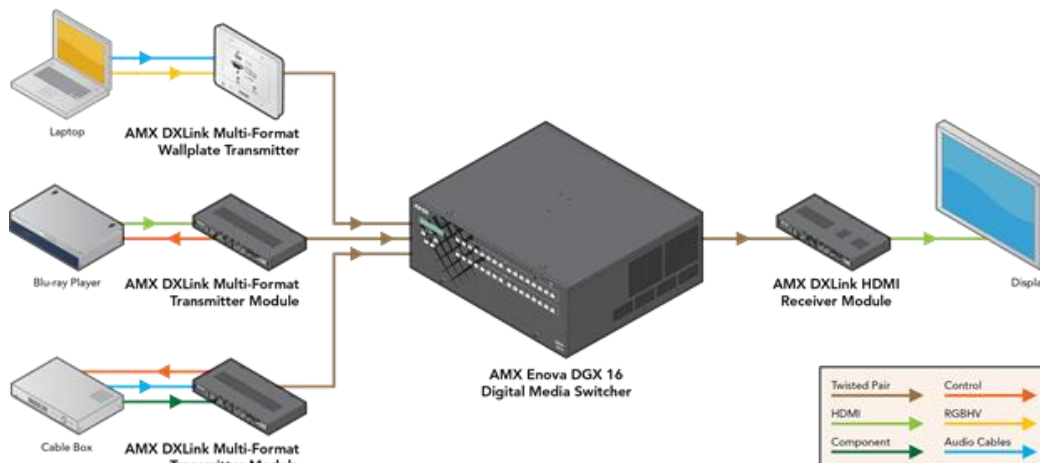
AMX SOLUTION – DXLINK TRANSMITTERS AND WALLPLATES

Multi-format DXLink Transmitters provide automatic analog to digital conversion allowing legacy analog source content to be switched and distributed through the digital matrix. Through the use of break-out cables connected to the HD-15 input connector, the transmitters recognize and accept Composite, S-video, Component and RGBHV signals and immediately convert them to a digital platform so that they can be switched freely with other digital or analog sources. This makes DXLink Transmitters ideal for guest presenter locations such as lecterns, conference room tables or any other location where temporary analog signals are needed in a centralized distribution system. In addition to the analog inputs, Multi-Format Transmitters and Wallplates also provide an HDMI connection for an additional digital source or when upgrading analog sources in the future.

The DXLink Transmitters are available in three types:

DXLINK HDMI TRANSMITTER

Front

Rear

DXLINK MULTI-FORMAT TRANSMITTER

Front

Rear

DXLINK WALL PLATES

Front (Black)

Front (White)

TWISTED PAIR DISTRIBUTION

PROBLEM - DISTRIBUTION OF DVI/HDMI VIDEO SIGNALS LONG DISTANCES
Because DVI and HDMI signals have high data rates, sending them further than 15m (45 feet) can result in signal dropout and failure. Since most AV applications require greater distances of signal travel, an alternative solution is required. Most available category cable solutions could only carry signals 30 – 60m (100 - 200 feet) at full resolutions of 1920x1080 and most required two category cables. These solutions typically resulted in unruly cabling, unnecessary rack space, and additional set-up time. Most importantly, many transport solutions consume extra HDCP keys, further limiting the distribution capability of HDMI/HDCP signals, which generally do not work well with other matrix switchers.

AMX SOLUTION – DXLINK RECEIVERS
With DXLink Receivers, these issues have been solved. Designed to operate on a single, standard good quality (250 MHz or better rating) twisted pair cable, DXLink can pass full resolution 1920x1200 at 60 Hz (including 3D and 2K resolutions) for distances of up to 100 meters (330 feet). DXLink technology provides a clean, simple-to-use and quickly deployable method for overcoming digital signal distance transport issues.
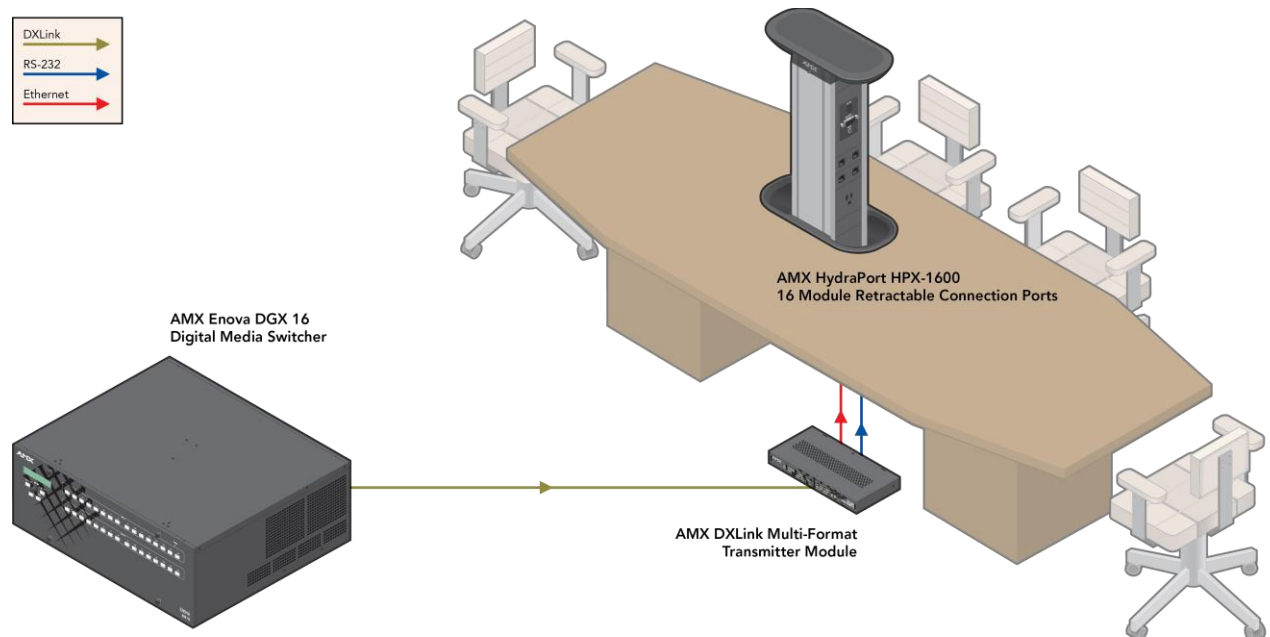
DXLINK RECEIVER

Front

Rear

The same single twisted pair cable also passes NetLinx bi-directional control, Ethernet from the embedded switch (including IP video capabilities) and USB keyboard and mouse control. Running all of this over a single cable simplifies the design and installation process by eliminating the need for separate control wires and reducing the number of required network drops.

DXLINK TRANSMITTERS AND RECEIVERS POWERED FROM THE ENOVA DGX 16/32

DXLink Transmitters and Receivers receive their power from DXLink input and output boards inside the Enova DGX enclosure. This means no additional POE injectors are needed at the rack where the matrix switcher is located. In a 32x32 matrix, requiring external POE injectors would result in the need for an additional 64 twisted pair cable terminations and several additional rack units.

This also frees up design locations for DXLink Transmitters to be placed anywhere video and audio inputs may be located, without having to worry about power feeds. Under conference room tables, lecterns and in-wall (DXLink Multi-format Wallplates) solutions benefit from this power capability since they no longer have to be located near power outlets.

In the illustration below, we demonstrate the simplicity of using DXLink in a meeting room. The DXLink is mounted under a conference room table with no need to provide local power as it receives power over Ethernet from the Enova DGX DXLink input board. The cables used to connect guest devices like a laptop are accessed above the table using AMX's HydraPort 1600 Architectural Connectivity solution.

DXLink
RS-232
Ethernet

AMX HydraPort HPX-1600
16 Module Retractable Connection Ports

AMX Enova DGX 16
Digital Media Switcher

AMX DXLink Multi-Format
Transmitter Module

AUDIO BREAKAWAY AND EMBEDDING

PROBLEM – ACCESSING EMBEDDED AUDIO ON HDMI

HDMI inputs integrate audio and video into the same cable. Unfortunately, embedded audio provides an added layer of difficulty when dealing with most installations. Because audio is embedded within the video stream, there is no way to access the audio directly for use in other locations than where the displays are located. Additionally problematic is the need to integrate audio over a digital input which doesn't yet have embedded audio (DVI from a computer) and must be routed through the common distribution system.

Both issues have traditionally required extra converters, extractors or embedding devices, which involve set-up, extra space and cabling hassles either before or after a centralized matrix switching system. But these issues have been eliminated with the Enova DGX 16/32 Audio Insert/Extract board.
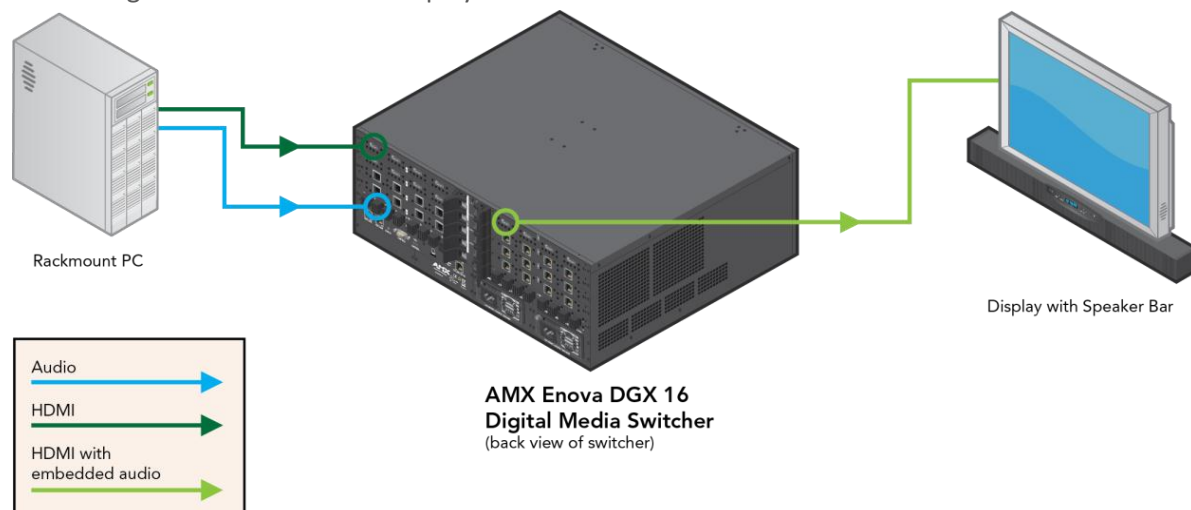
AMX SOLUTION – AUDIO INSERT/EXTRACT BOARDS

The Audio Insert/Extract board allows integrators to access embedded HDMI audio from local or distance transport inputs or outputs and can be set up to provide insert or extract functionality on a per channel basis. The board is loaded in either the input or output side expansion slot and does not reduce the overall matrix size through its use. For even greater flexibility, an Audio Insert/Extract board can be loaded on both input and output sides to access both inputs and outputs simultaneously. This solution greatly increases the usability and access of embedded audio without requiring extra audio strippers/extractors either before or after the matrix switcher.

The illustrations show options to embed or de-embed audio from various sources to various outputs.

INSERTING AUDIO TO A DIGITAL VIDEO ONLY SOURCE TO PROVIDE HDMI WITH EMBEDDED AUDIO OUTPUT (SOURCE SIDE - AUDIO INSERTION)

This design allows a separate audio source from the PC to be embedded with the video source and sent over a single HDMI cable to the display:


Rackmount PC

Display with Speaker Bar

Audio

HDMI

HDMI with embedded audio

AMX Enova DGX 16 Digital Media Switcher (back view of switcher)

EXTRACTING EMBEDDED AUDIO FOR USE IN A SUPPLEMENTAL AUDIO SYSTEM FROM HDMI INPUT (SOURCE SIDE - AUDIO EXTRACTION)

This design allows audio from the Cable Box to be de-embedded and sent through a separate audio system:
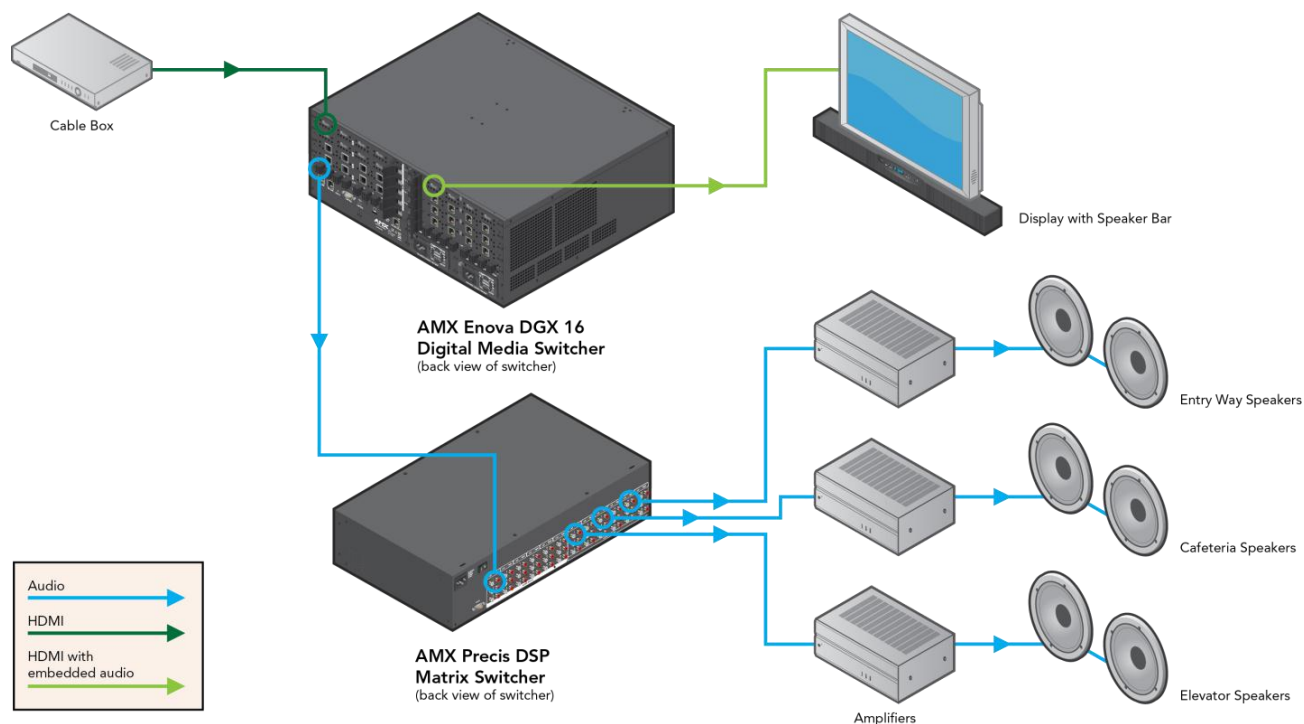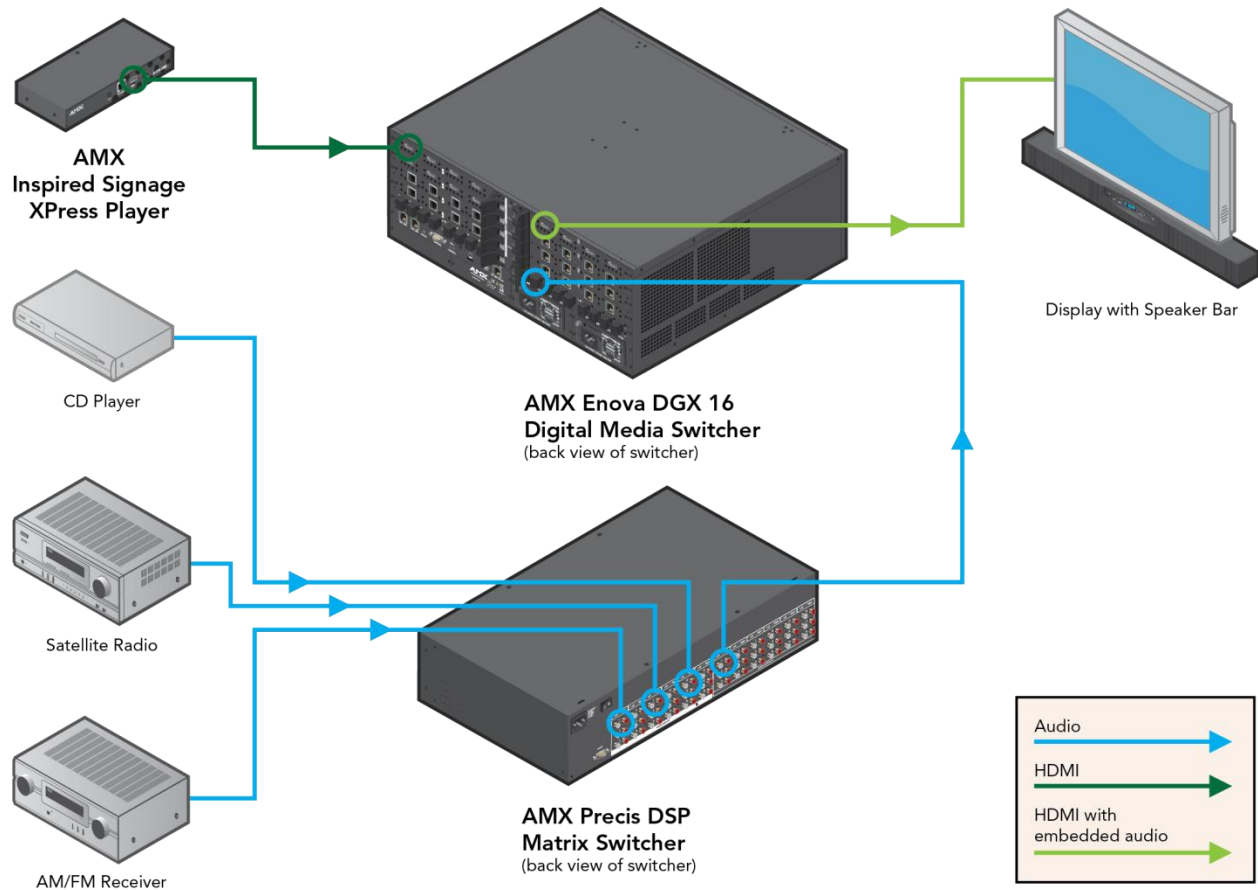

EXTRACTING AUDIO FOR SUPPLEMENTAL AMPLIFIED AUDIO OUTPUTS (OUTPUT SIDE - AUDIO EXTRACTION)

This design allows audio to be de-embedded from the Cable Box and played over a separate audio system while a projector displays the video:
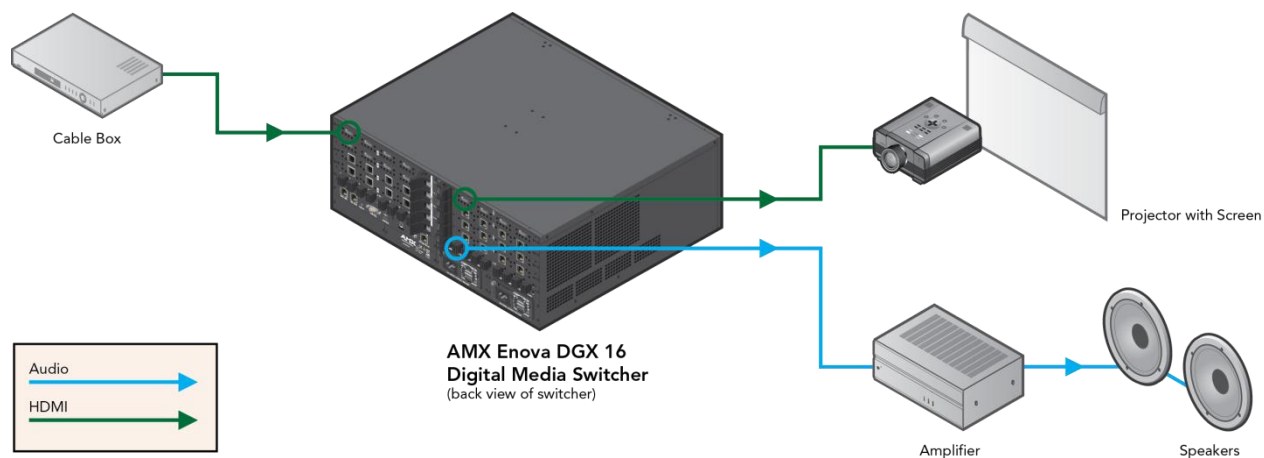
EXTRACTING AUDIO INPUTS AND EMBEDDING AUDIO ON OUTPUTS
TO PERFORM SEPARATE AUDIO SWITCHING – (OUTPUT SIDE - AUDIO INSERTION)

This design provides the ability to watch video from a source while listening to audio of a second source on a single display:

AMX
Inspired Signage
XPress Player

CD Player

Satellite Radio

AM/FM Receiver

AMX Enova DGX 16
Digital Media Switcher
(back view of switcher)

Display with Speaker Bar

AMX Precis DSP
Matrix Switcher
(back view of switcher)

Audio

HDMI

HDMI with
embedded audio

INTEGRATED NETLINX CENTRAL CONTROLLER

PROBLEM – PLACING A CONTROLLER IN EVERY ROOM IS COSTLY AND COMPLEX
In a widespread digital media installation, having control of devices for operation is a critical need. But placing a controller in each room adds cost and complexity.
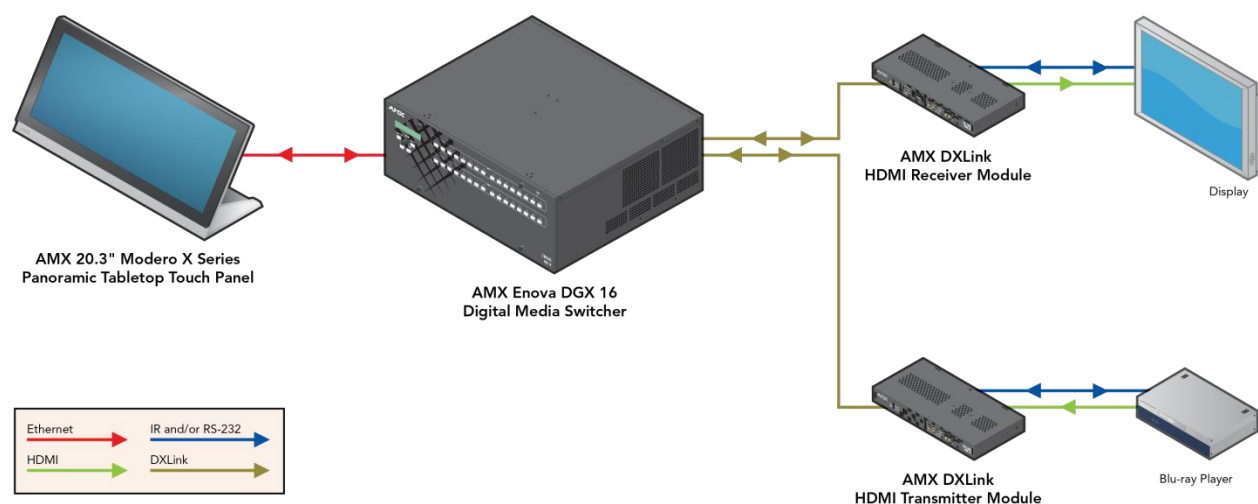
AMX SOLUTION – INCLUDE AN EMBEDDED CENTRAL CONTROLLER WITHIN THE ENOVA DGX
Enova DGX 16/32 Digital Media Switchers include a full NetLinx Central Controller. But there is no external control port located on the chassis. So why is a controller built-in?

First, the Enova DGX is self-controlled. Because the matrix switcher has an integrated central controller, control programming code can be added to it, and can be controlled via any standard Ethernet enabled user interface device (Touch Panels, Keypads, etc.).

But switching control is only one value of the embedded central controller. The Enova DGX features DXLink input and output boards that, when used with DXLink Transmitters and Receivers, enables those endpoints to become Native NetLinx control ports. With IR TX/RX, bi-directional RS-232 and USB keyboard and mouse/host device capabilities at the transmitter and receiver location, the Enova DGX provides centralized control in addition to being an industry leading HDMI/HDCP matrix switching solution. And because NetLinx control runs over the same standard twisted pair cable, no extra cables are needed to bring control to each environment. Control, audio and video is housed in a single enclosure significantly minimizing extra cables, rack space and termination time required by other solutions without an embedded controller.

USING ENOVA DGX WITH EMBEDDED CONTROLLER AND DXLINK TO PROVIDE CONTROL

AMX 20.3" Modero X Series
Panoramic Tabletop Touch Panel

AMX Enova DGX 16
Digital Media Switcher

AMX DXLink
HDMI Receiver Module

Display

AMX DXLink
HDMI Transmitter Module

Blu-ray Player

Ethernet	IR and/or RS-232
HDMI	DXLink

INTEGRATED ETHERNET SWITCH

PROBLEM – ETHERNET IS NEEDED IN EVERY ROOM

Ethernet access in meeting rooms is critical to support common business applications.

AMX SOLUTION - INCLUDE AN EBMEDDED ETHERNET SWITCH WITHIN THE ENOVA DGX

In addition to matrix switching, AMX control and distance transport, the Enova DGX also includes an unmanaged Ethernet switch. With a Gigabit link on the Enova DGX enclosure, this Ethernet distribution system provides Ethernet connections at each DXLink Transmitter and Receiver (labeled ISCLan port) for up to 100 Mbps of data transfer. Just like AMX control, this functionality is integrated within the single twisted pair cable connection between the Enova DGX and DXLink Transmitter or Receiver boxes.

Common applications for this capability are: wireless access points, IP enabled displays, distribution of IP media or general LAN connectivity to guest laptops at DXLink endpoints.

And, because the Ethernet switch is connected to the embedded central controller, additional ISCLan devices or Ethernet-enabled interfaces are provided a simple connection point at each DXLink Transmitter or Receiver.
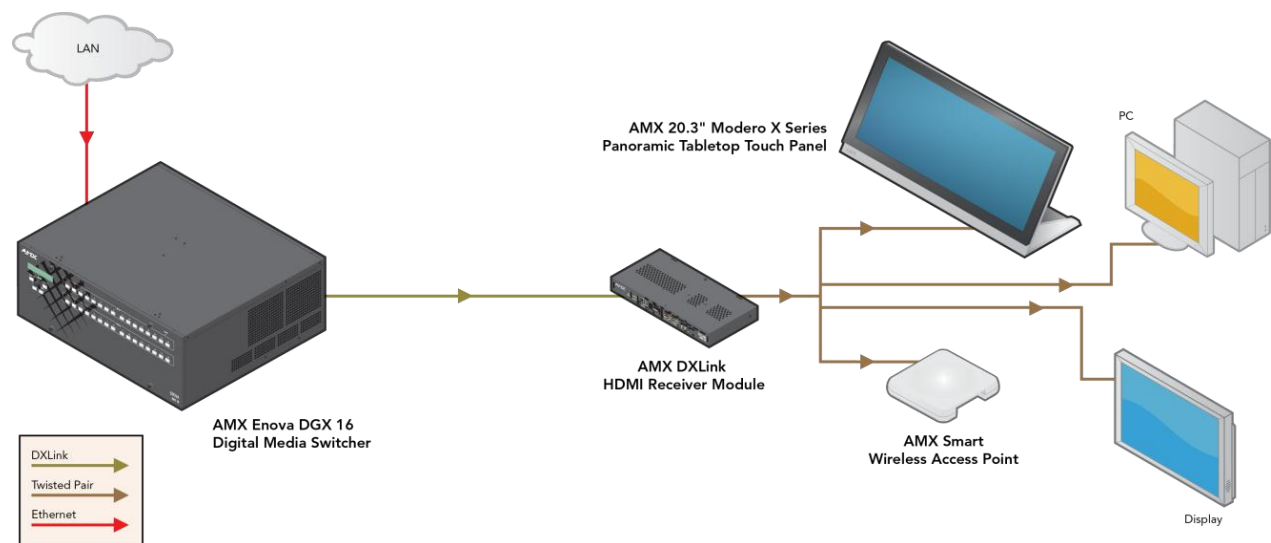
COMPACT, EFFICIENT DESIGN

PROBLEM – TYPICAL DIGITAL MEDIA SWITCHERS REQUIRE LARGE AMOUNTS OF RACK SPACE

Most digital media switchers are large creating the need for a dedicated space for equipment, especially when external controllers, scalers, and all the source devices are added to an installation. This can be a real challenge in retrofit designs where space is limited or a room layout does not accommodate a rack.

AMX SOLUTION – ENOVA DGX COMPACT DESIGN USES VERY LITTLE RACK SPACE

Enova DGX Digital Media Switchers take up the smallest amount of rack space versus our nearest competitors. At 4 rack units for the 16x16 and 6 rack units for 32x32 sized systems, these switchers offer integrators and consultants a compact, rack space saving option. Because the Enova DGX series includes embedded features like a Central Controller and Ethernet Switch, they provide an even higher level of space savings versus competitors that require separate pieces of hardware in the rack to perform equivalent functionality. It is so small it can even be installed in a piece of furnature.

- Embedded power to DXLink Transmitters or Receivers without extra POE injectors at the rack (1-6+ rack units of savings)
- Embedded central controller (1-2 rack units of savings)
- Embedded 64 port Ethernet switch (1-3 rack units of savings)

4 RU

Enova DGX 16 – Rear

6 RU

Enova DGX 32 – Rear

DESIGN FOR RELIABILITY

Enova DGX 16/32 Digital Media Switchers are designed from the ground up to provide the highest level of up-time available in the market today.

- Systems include redundant, fully hot-swappable power supplies to ensure constant operations
- Independent AC power inputs allow power feeds from different AC circuits to be utilized providing additional redundancy benefit
- Input and output boards are fully hot-swappable, field-expandable and recognized/configured automatically during run time when they are loaded into the system
- CPU is field-replaceable and offers a system configuration memory card to further eliminate unnecessary down-time
- Each Enova DGX 16/32 includes a limited lifetime warranty as further assurance of AMX's enduring commitment to their longevity

For more information about the Enova DGX 16/32, please visit www.amx.com

FEATURE SUMMARY

FEATURE	DESCRIPTION	BENEFIT
HDMI/HDCP Switching with Simplicity of Analog	End-to-end distribution of HDMI/HDCP without interruption or key constraints	Eliminate the headaches and workarounds to install devices requiring HDMI/HDCP compliance
AV and Control over Twisted Pair	Send audio, video, bi-directional control and Ethernet up to 100 meters over a single standard good quality (250 Mhz or better rating) twisted pair cable	Reduce cable costs and simplify installation of devices using standards-based cabling
Embedded NetLinx Controller	The DGX includes a built-in AMX NI-3100 NetLinx Central Controller, which allows any connected device to be managed, monitored or controlled	Easily program and manage the entire solution including source equipment and display devices located across multiple rooms – all from a single point of control
Integrated Ethernet Switch	Pass Ethernet or stream IP video through the attached DXLink Transmitter or Receiver	Reduce the complexity of larger installations where sources and outputs
Analog to Digital Video Conversion with Scaled Outputs	Converts any source signal to digital and uses SmartScale Technology to automatically output video that is perfectly scaled for each connected display	Interconnect devices of mixed formats without adding cost of external converters or increasing failure points
Compact Enclosure	Comparatively speaking, it takes up half the space of the competition	Take up less rack space and provide flexibility on installation locations
InstaGate Pro Technology	Allows traditionally key limited sources to be freely switched to any HDCP compliant display without the typical HDCP delays	Easily integrate HDCP into system designs and enjoy hassle-free matrix switching to all compliant displays; no tools, no delays, and no key constraints – it just works
SmartScale Technology	Automatically responds to the display's declared EDID information and scales the video to the best resolution and video parameters for that display without manual setup	Display optimal resolution on every display with no image degradation in applications with mixed resolution
DXLink Twisted Pair Input and Output Boards	HDCP Compliant boards send audio, video, control, Ethernet and power over one standard twisted pair cable up to 200m – 100m to the matrix switcher and 100m after the matrix switcher	Reduce the complexity of larger installations where sources and outputs are installed far from the switcher
Hot Swappable Video Input / Output Boards	Video I/O boards can be swapped and the system automatically recognizes the new configuration and activates the boards	Easily add or replace I/O boards at any time after deployment
Audio Insert / Extract Boards	Add audio from a local source or breakaway embedded audio and send to a separate audio system to distribute throughout an environment	Flexible options for pairing audio with video
Fiber Input and Output Boards	Use in conjunction with DGX Fiber Transmitters and Receivers to send analog and digital audio and video* over fiber *Fiber input and output boards provide support for non-HDCP signals only	Allows for distribution of audio and video up to 1000m
3D Support	Pass through the latest video formats including 3D and Deep Color	Future proof
Surround Sound Support	Pass through high definition surround sound including DTS-HD and Dolby TrueHD	Provides optimal audio quality
High Speed Digital Switching	12.8 Gbps	Ensures perfect pixel for pixel reproduction of video
Fully Redundant Power Supplies With Independent Power Paths	Allows two separate power sources to send power to the switcher	Ensures maximum reliability for applications that require 24/7 uptime